

What are cyclic steam injection wells –

Cyclic steam injection wells are a type of enhanced oil recovery well that uses alternating phases of steam injection and oil production from the same well. Cyclic steam wells inject into hydrocarbon-bearing formations to recover oil that is very viscous. The steam is used to heat the oil in order to cause it to flow towards the wellbore; then the oil is brought to the surface. There are several thousand cyclic steam wells in CA and they are regulated by the CA Division of Oil, Gas, and Geothermal Resources as Class II Underground Injection Control (UIC) wells. As with other Class II wells in CA, cyclic steam wells would require approval of an aquifer exemption by EPA if the oil-bearing formation they inject into is an aquifer with TDS levels below 10,000 mg/L (ppm). As EPA noted in our letter of March 9, 2015, the State did not include a specific accounting of cyclic steam wells in its “Breakdown of Wells Potentially Injecting into Non-Exempt USDW Zones” (Enclosure B of the State’s February 6, 2015 letter to EPA). Thus, EPA is requiring the State to update Enclosure B by May 15, 2015 to include cyclic steam wells, and provide a schedule for completing the State’s review of these wells and bringing them into compliance by February 15, 2017.

How are cyclic steam wells regulated?

Cyclic steam wells are regulated by DOGGR as Class II wells. These wells are subject to the state’s regulations in the California Code of Regulations, Title 14.

What is hydraulic fracturing?

Hydraulic fracturing is a well stimulation process used to maximize the extraction of underground resources; including oil, natural gas, geothermal energy, and even water. The oil and gas industry uses hydraulic fracturing to enhance subsurface fracture systems to allow oil or natural gas to move more freely from the rock pores to production wells that bring the oil or gas to the surface. Fluids, commonly made up of water and chemical additives, are pumped into a geologic formation at high pressure during hydraulic fracturing. When the pressure exceeds the rock strength, the fluids open or enlarge fractures that can extend several hundred feet away from the well. After the fractures are created, a propping agent is pumped into the fractures to keep them from closing when the pumping pressure is released. After fracturing is completed, the internal pressure of the geologic formation cause the injected fracturing fluids to rise to the surface where it may be stored in tanks or pits prior to disposal or recycling. Recovered fracturing fluids are referred to as flowback. Disposal options for flowback include discharge into surface water or underground injection.

How does EPA regulate hydraulic fracturing?

Several federal laws may be leveraged to protect water quality, but EPA's central authority to protect drinking water is drawn from the Safe Drinking Water Act (SDWA). The protection of underground sources of drinking water (USDWs) is focused in the Underground Injection Control (UIC) program under the SDWA, which regulates the subsurface emplacement of fluid. However, Congress provided for exclusions to UIC authority with the Energy Policy Act of 2005. While the Energy Policy Act of 2005 specifically excludes hydraulic fracturing from UIC regulation, the use of diesel fuel during

hydraulic fracturing is still regulated by the UIC program. Any service company that performs hydraulic fracturing using diesel fuel must receive prior authorization through the applicable UIC program. State oil and gas agencies may have additional regulations for hydraulic fracturing. In the case of California, these activities are regulated under SB 4. . In addition, states or EPA also have authority under the Clean Water Act to regulate discharge of produced waters from hydraulic fracturing operations.

What is SB 4?

SB4 is California's newly law regulating oil and gas well stimulation. Oil and gas well stimulation is defined as: "any treatment of a well designed to enhance oil and gas production or recovery by increasing the permeability of the formation. Well stimulation treatments include, but are not limited to, hydraulic fracturing treatments and acid well stimulation treatments. Well stimulation treatments do not include steam flooding, water flooding, or cyclic steaming. Additionally, such treatments do not include routine well cleanout work, routine well maintenance, routine removal of formation damage due to drilling, bottom hole pressure surveys, or routine activities that do not affect the integrity of the well or the formation."

How do cyclic steam injection wells relate to hydraulic fracturing?

Cyclic steam injection is a method of enhanced oil recovery used to heat oil in order to make it more viscous so it may be produced from a well. Hydraulic fracturing uses fluids to enhance subsurface fracture systems to allow oil or natural gas to move more freely from the rock pores to production wells that bring the oil or gas to the surface. Cyclic steaming is specifically excluded from regulation under SB 4.